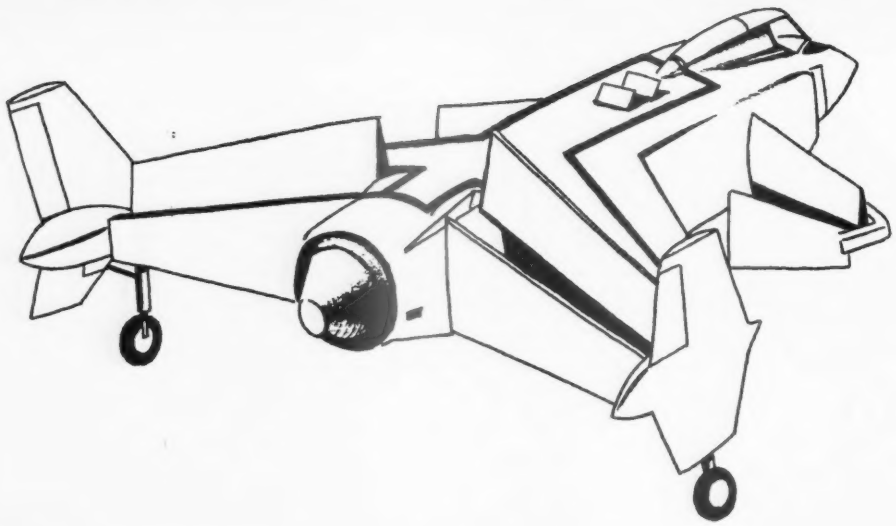
approach

AUGUST 1974 THE NAVAL AVIATION SAFETY REVIEW



The Need Is Real

In an attempt to size the problem, the Naval Safety Center conducted an exhaustive review of all aircraft mishaps occurring during the period FY-70 to present. Initially, a sort was made to extract records of all accidents wherein contributing causal factors included either inadequate aircrew performance or undetected progressive deterioration of aircraft safety of flight systems. These records were then carefully analyzed by experienced Center analysts to select those which could have been avoided with reasonable expectancy if some type of warning display had been available to the crew. From this selection, accidents were categorized according to the single element most likely to have precluded the accident. The results of the foregoing process are tabulated below:

- Incorrect use of emergency procedures: 33 aircraft destroyed, 13 aircraft damaged, 19 fatalities.
- Incorrect use of checklist: 5 aircraft destroyed, 18 aircraft damaged.
- Lack of stabilator position indicator (peculiar to F-4): 8 aircraft destroyed, 6 fatalities.
- Lack of subsystem malfunction advisory information: 42 aircraft destroyed, 65 aircraft damaged, 75 fatalities.
- Lack of midair warning system: 8 aircraft destroyed, 7 aircraft damaged, 10 fatalities.
- Lack of VN envelope information to pilot: 42 aircraft destroyed, 8 aircraft damaged, 27 fatalities.
- Lack of VQ envelope information to pilot: 18 aircraft destroyed, 5 aircraft damaged, 20 fatalities.
- Lack of altitude warning system: 34 aircraft destroyed, 6 aircraft damaged, 59 fatalities.
- Inadequate precision approach information: 15 aircraft destroyed, 46 aircraft damaged, 4 fatalities.
- Inadequate CVA precision departure information (reverse ACLS): 16 aircraft destroyed, 21 fatalities.
- Lack of accurate rate-of-sink indications: 6 aircraft destroyed, 2 aircraft damaged, 7 fatalities.

The above mishaps resulted in 227 aircraft destroyed, including 71 F-4s, 39 A-4s, and 40 A-7s. The destroyed aircraft equate to six F-4 squadrons, three A-4 squadrons, two RA-5 squadrons, three and a half A-7 squadrons, half an A-6 squadron, and two helo squadrons – enough aircraft to equip two full air wings – and 248 fatalities – a full wing aircrew. In addition, 170 aircraft received substantial to minor damage.

The above statistics do not include those accidents attributed to the area of cockpit design such as visibility, throttle quadrant design, switchology, cockpit size, or lighting. This category produced an additional 25 aircraft destroyed, 21 aircraft damaged, and 21 fatalities.

Although the above results were admittedly derived by subjective analysis, it is considered that by any standard they dramatically portray the potential benefit from improving the man/machine interface. It has lagged far behind other technological developments in aircraft design.

Excerpt from COMNAVSAFECEN presentation to Advanced Aircrew Display Symposium

ADVANCED AIRCREW DISPLAYS

AN ADVANCED aircrew display symposium was hosted by Commander, Naval Air Test Center, Patuxent River, on 18 and 19 April 1974. In attendance were leading figures in aviation and related sciences, including the principal speakers, VADM F. H. Michaelis, COMNAVAIRLANT, Dr. Werner Von Braun, and RADM A. B. Sheppard. The purpose of the symposium was to consider long range development efforts to improve the man/machine interface in naval aircraft.

The ultimate goal of this development effort is to ensure a tactical advantage for Navy aircrews in combat operations against any potential enemy and simultaneously reduce accidents. This can only be done by equipping the aviator to consistently operate his aircraft at its structural, aerodynamic, and stability limits without exceeding them and provide him with better information regarding imminent or actual hazards to safety.

Air combat maneuvering is one area where this would pay off handsomely. Tests at NATC, using experienced test pilots, showed that these pilots, using standard cockpit displays, achieved on the average only about 75 percent of the total energy available, *even though they thought they were flying the aircraft to its limits.* Add to this the number of aircraft lost to inadvertent departures (42), and the desirability of improved displays is apparent.

The problem is that present cockpit instrumentation is primitive, considering the state-of-the-art. It is the result of years of piecemeal development which has led to a very cluttered cockpit. Admittedly, this myriad of instruments does provide the aircrewman with much more information than he had in years gone by. Nevertheless, his need for information has multiplied many fold. The net result is that the aircrewman's workload has been vastly increased – often beyond limits (see accompanying box). An important step in the solution to this problem is . . .

AIMIS (Advanced Integrated Modular Instrument System). NADC (Naval Air Development Center), Warminster, PA, has been tasked with developing an advanced integrated modular instrument system which will vastly increase the information available to aircrews and at the same time reduce the workload necessary to effectively utilize this information. NATC has been tasked with testing AIMIS.

Currently identified operational requirements for the next generation of manned airborne weapons systems dictate that the aircrew have the ability to acquire and destroy a target, day or night, good weather or bad. This requirement far exceeds visual sighting capabilities alone. Therefore, greatly improved methods for interfacing projected weapon displays with system operators must evolve to provide man with sufficient inputs for decisionmaking.

This requirement can only be met through the development of aircrew display systems that readily present interpretable information to take advantage of

AIMIS
ADVANCED INTEGRATED MODULAR INSTRUMENTATION SYSTEM

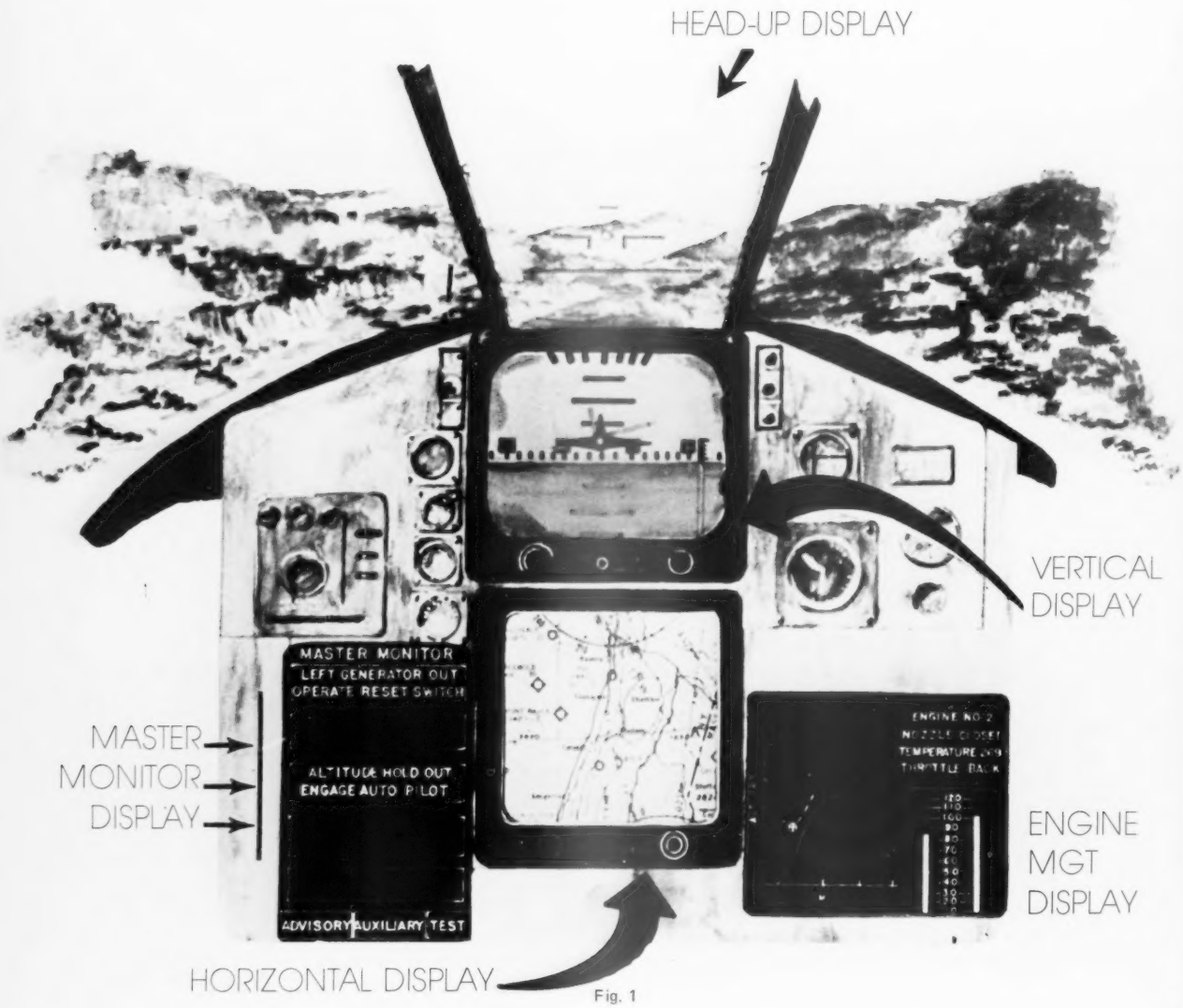


Fig. 1

state-of-the-art displays and computers. The goals are: provide naval air forces with an essential improvement in the quality of aircrew displays and to provide aircraft with a display system that will show energy maneuverability trends, stability, and structural limits in an integrated manner and also improve the information transfer function of the display. Improved maintainability of display systems will be achieved through a programmable modular concept.

The AIMIS baseline development consists of five cockpit display subsystem modules with their associated digital processors, sensors, and controls (see Fig. 1). The prime operational features of these subsystem modules from the pilot's viewpoint are:

- *HUD (head-up display).* Weapon delivery and flight situation and commands superimposed on the pilot's forward field of view.
- *VSD (vertical situation display).* Weapon delivery and flight situation and commands for nonvisual flight conditions, providing for high resolution display or sensor data (IR, TV, radar, etc.) in real time and/or from storage.
- *HSD (horizontal situation display).* A full color map showing aircraft present position, points of interest, and general navigation information.
- *MMD (master monitor display).* A single, coordinated display for warning (or caution) to the pilot, auxiliary data, and advisory information providing problem solutions/suggestions.
- *EMD (engine management display).* Engine performance and monitoring and management by exception. Engine management data will be provided for optimizing cruise range. This subsystem will provide for failure prediction (in flight) and storage of engine sensor data to aid in postflight maintenance analysis.

Operational User Inputs. An important aspect of the development effort will be to crank in operational user inputs early in the development cycle. These inputs will then receive thorough testing and evaluation before hardware designs are finalized. This will ensure that cockpit instrumentation ultimately adopted will meet the actual needs of the Fleet.

Feedback of Information. The development and test efforts at NADC and NATC are organized to provide a steady feedback of information to NAVAIRSYSCOM. This will ensure that advances resulting from these efforts are included in specifications written for new aircraft procurement.

The Outlook. Figure 2 shows a proposed development timetable. Assuming that this timetable is met and funds are made available, AIMIS should be available for incorporation in production aircraft by 1980. ◄

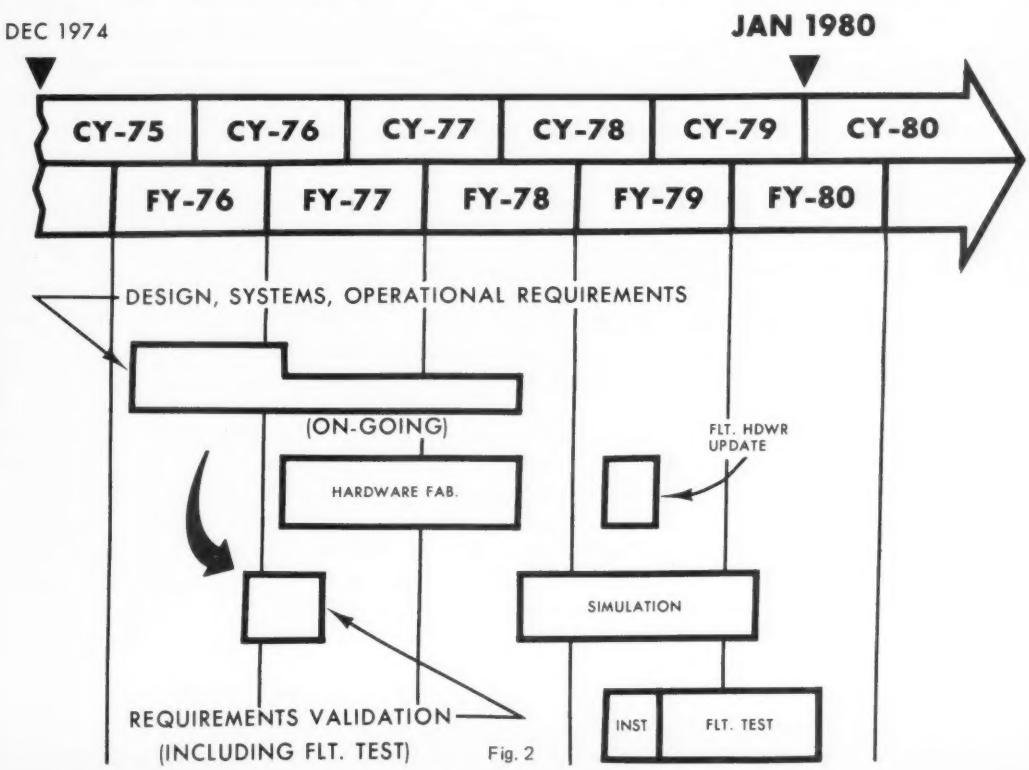
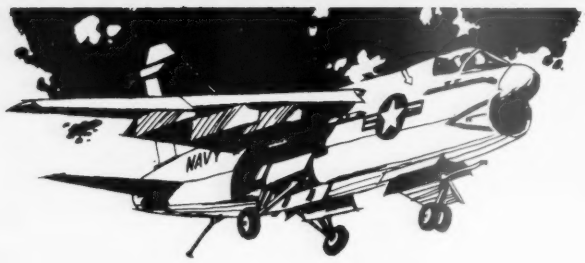


Fig. 2

AIR BREAKS



Cross-check Those Instruments. A flight of two A-7Es were returning from a night radar navigation flight. The flight was IFR and had requested a section penetration and PAR to a low approach, then to enter the VFR traffic pattern. Just prior to intercepting the glide slope, the controller advised the section that the tower would not accept VFR traffic. A discussion between the flight leader and the controller followed.

During the discussion, lead shifted his primary scan to the HUD (heads-up display) to be as smooth as possible for the wingman. The HUD indicated that straight and level flight was being maintained when in fact the aircraft was in a 700 fpm descent. No glide slope information had been given.

At approximately 2 miles from the runway, the controller called the flight below glide slope. At this time, the lead aircraft's radar altimeter indicated 600 feet AGL. *The leader's ASN-91 tactical computer had failed with no caution light!*

It is extremely fortunate that two aircraft weren't lost. Up until the glide slope, the computer had worked perfectly. All pilots should be cautioned again that relying on one instrument is very dangerous. The HUD should frequently be cross-checked with the primary and secondary flight instruments.

A Black Hole. During a night taxi from his line to the duty runway, an A-6 pilot taxied onto a grass area. A temporary taxiway was being used to route aircraft around construction.

The unlucky pilot used his taxi light at three of four intersections, but at the last one before returning to the concrete, he refrained from using the taxi light to keep from blinding a helo pilot landing on the approach end of an off-duty runway. After the helicopter had landed, the A-6 driver received clearance to proceed and became disoriented. He turned 40 feet early and became stuck in soft ground.

His disorientation was caused by two or three missing taxi lights on the right side of the temporary taxiway. The left side was marked by flashing amber lights atop 55-gallon drums. His gear wasn't damaged, but he couldn't move, so he shut down the port engine and left his starboard engine burning to provide power for his exterior lights. Since other aircraft were taxiing out behind him, he didn't want to cause a collision.

Wouldn't you know he had been sucked in by a burned out string of blue lights? The activity reported that the lights would be replaced. What was going on in Ops? Why didn't the tower advise taxiing aircraft to exercise caution due to burned out lights? Even more important, why weren't flares put out to replace the burned out lights until they could be replaced?

Down, But Not Under. Two helicopters departed one flattop for another just a few miles away. They were both close to max gross. Number 2 helicopter tagged along in trail to port.

The lead H-3 was cleared to land on No. 4 JBD (jet blast deflector), and No. 2 was cleared to land forward on the angle. Lead commenced his approach, but when abeam the JBD at 100 feet, was unable to see the LSE. It was waveoff time.

The LSE was standing well forward of the JBD, alongside an A-7 parked behind the foul line.

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The LSE assumed that No. 2 would land first and was waiting for its rotor wash to subside before stepping out and directing No. 1.

The HAC of No. 1 transmitted his intentions to wave off and began a left turn. When he saw his path blocked by No. 2 (400 feet away and level), he was in extremis. He slowed to let No. 2 go by. This done, he discovered there was insufficient power and left rudder. The helicopter began a slow, descending spin to the right and, after a complete 360, settled into the sea.

The HAC and his crew weren't through for the day. Despite surface winds of 15 knots and a choppy sea, the HAC stabilized the HH-3A and after one abort was able to get airborne. He landed safely aboard a few minutes later.

Number 1 helo had incurred mechanical problems just when it didn't need any. Left rudder authority was reduced to half. Safety wire had been left off and the jamnut of the negative force gradient backed off, causing the shaft to bind against the spring. Additionally, an apparent fuel control malfunction had occurred.

The helo's high gross weight (19,000 pounds), combined with partial power and only one-half rudder authority, resulted in the inability to maintain a hover out of ground effect.

Despite these problems with No. 1, the flight of two could have been routine all the way. The landing sequence initially transmitted to the helos resulted in there being no clear waveoff avenue for No. 1. Number 1 should have been cleared to land forward on the angle and No. 2 aft on the No. 4 JBD, or any combination other than the sequence given. For sure, there were no kudos for the personnel of Pri-Fly.

Finally, since both helos were on tower frequency and heard each other's landing instructions, the pilots recognizing the dangers involved should have squeaked up.

Pilots must remember (expletive deleted) that landing instructions are advisory, *not mandatory,* and if they don't like 'em, say so!

Night Rescue Practice. SAR pilots who are called upon to make night rescue flights, particularly over water, find that holding a steady hover taxes one's ability. Usually, a pilot finds he's required to hover with few visual cues, and peculiarly enough, this most demanding maneuver is the least practiced on training flights.

How do you simulate this condition? One activity uses navigation buoys to simulate night rescues. This adds realism not possible over land. Their procedure is to hover alongside the buoy, drop the horsecollar, and maintain a steady position on the buoy.

During one night training flight, the pilot entered a hover, and his crewman lowered the horsecollar. The pilot had difficulty maintaining a steady hover. The helicopter began drifting, and the hoist cable and horsecollar became entangled in the superstructure of the buoy.

Before the pilot could react, the crew heard a loud noise, and the boom assembly broke away from the helicopter decking. The horsecollar was brought up by hand. It was in shreds. The maneuver was terminated, and the pilot returned to base.

The squadron was operating under a waiver for night, overwater SAR operations. Rescue practice is essential to its SAR readiness. In the light of this incident, the squadron continues to practice on buoys – but they use buoys free of any superstructure.

Delayed Maintenance. Two pilots wearing "railroad tracks" were scheduled for a routine training flight in a C-130. The IP (instructor pilot) was in the right seat, and the PUI (pilot under instruction) was flying the aircraft from the left.

After takeoff, they climbed to altitude to practice some basic airwork. Then they descended to the traffic pattern and were cleared to shoot a few landings. On the downwind leg, the PUI called for 50 percent flaps. The IP selected half flaps, but no movement was evident, and visual inspection disclosed flaps were up.

The pilots and plane captain discussed the problem and decided that the ground test valve must not have been closed. They selected the utility hydraulic system, and flaps were lowered. An uneventful landing ensued.

Investigation revealed their airborne guess was correct, due to an incomplete, improper preflight.

This incident should not have occurred. In determining how and why it did, however, several reasons surfaced.

- Maintenance was not completed until *after* the plane captain's preflight had been conducted.
- The first flight engineer knew what maintenance was being performed and failed to doublecheck when it was completed.
- The IP saw the ground test valve door open on his preflight and failed to ask later if it had been secured.
- The PUI didn't check the hydraulic gages on the before-starting-engines checklist.

If maintenance is still being performed when you reach the aircraft, use the extra time profitably, but hold the preflight until maintenance is completed. To do otherwise may be OK for a rare operational mission or an emergency departure, but in a training situation, never. ◄

HAZARDS of High Frequency Radiation

By LT T. Moslak, USNR-R

SINCE high frequency radiation cannot be readily detected by the human senses, a few reports and rumors of fearsome side effects on persons exposed to radar beams have more than once found an interested audience. We often ask ourselves "Just how dangerous is radar radiation?" It is recognized that radio frequency radiation is a personnel hazard, but it is not a phenomenon meriting unreasonable fear. It is, rather, a hazard to be regarded respectfully, much as one might regard fire: very useful when properly used, but potentially dangerous when treated carelessly.

Advanced communications and radar systems incorporating high powered transmitting tubes and high gain antennas are the source of hazard to both personnel and equipment. The nature of the hazard is the creation of radio frequency electromagnetic fields of sufficient intensity to produce harmful biological effects in humans, cause spark ignition of volatile combustibles, or actuate electroexplosive devices contained in ordnance systems.

Carefully controlled experiments and studies have been made over a period of several years to detect any possible harmful effects upon personnel working with or near high powered airborne radar. Medical experiments with test animals have established that a hazard may exist under certain conditions. But, proper precautions can prevent adverse effects just as they do in other potentially dangerous situations.

Let's briefly review the radar wave itself, then examine the findings from controlled medical tests and from the surveillance of persons working with airborne radar. Safety precautions from both the physiological and physical standpoints will also be discussed for personnel working with radar, particularly systems in the S-3A and F-14A aircraft.

The Radar Beam. *What it is:* Radar waves originate as electromagnetic impulses in a high frequency oscillator tube called the magnetron. These impulses are generally referred to as microwaves, because of their relatively short wavelength. They are carried through a waveguide to a transmitting antenna which projects the waves into space at the speed of light. Upon striking an object which they cannot penetrate, the waves are reflected back to the antenna and waveguide. These reflected waves are similar in frequency and wavelength, but are of considerably less power than the original projected waves. A receiver translates the reflected wave into the visual presentation of range and bearing that appears on the radar screen.

How it affects us: The biological effects of radar are, to a great extent, associated with the radar's frequency and wavelength as well as its average field intensity (power). It is the nature of microwave radiation that at lower frequencies, below one gigahertz (giga – one billion), the electromagnetic energy will penetrate to the deep body tissues; whereas, at higher frequencies, above three gigahertz, maximum heating effects occur at skin level, where it is most easily felt and dissipated. At frequencies between one and three gigahertz, the percentage of energy absorbed ranges from 20 to 100 percent because of varying degrees of penetration. The heat produced by microwave radiation is capable of adversely affecting living tissue if the organism cannot dissipate the heat as rapidly as it is produced.

This type of exposure may be especially undesirable in that a high degree of heat is generated below the nerve endings that generally serve as heat detectors. It is, therefore, possible for this type of radiation to produce relatively high heat levels in the body without any warning to the person exposed. This situation is difficult to understand. As an analogy, however, it is true that if a slab of butter approximately ¾-inch thick was placed upon a cut of beef, then exposed to 10 centimeter S-band radar, the butter would first melt at the butter and meat junction, rather than at the top level of the butter as one might expect.

Effects on Operating Personnel: The consensus among military and civilian medical investigators is that the primary danger to the body from radar radiation is

due to the heating effect. Injury does not occur instantaneously, but must be applied for various periods of time at certain intensities of power. There is essentially no radiation danger from the reflected wave since this is greatly reduced in power at the time of visual display. Radar-equipped aircraft in flight offer no hazards to the flightcrews as the radar waves are usually absorbed or reflected by the shielding of the transmitters. And at the present time, there is certainly no reason for carrier or maintenance personnel to fear exposure if standard operating procedures are adhered to and personnel remain outside minimum safe distances from operating radar.

Medical Studies and Findings. Particular attention must be paid to the eye. The transparent lens of the eye appears to be easily damaged by intense radiation energy, whether ionizing, infrared, or microwave. The lens is especially susceptible to thermal damage since it lacks a blood supply to dissipate heat. Temperature elevations within the eye may alter the metabolic processes of the lens cells and lead to damage or cellular death. Since damaged cells cannot be shed or replaced, a permanent opacity results. If this opacity is large enough to measurably interfere with vision, it is termed a cataract. The damaged cells may lose their transparency slowly, and as a result, depending upon the extent of damage, the individual suffers impaired vision. Lens opacities or other changes can be identified promptly and their development investigated without need for anesthesia by use of the slit lamp. The slit lamp is an instrument which projects a narrow beam of light into the eye and provides sufficient magnification to enable the visual study of the various layers in the eye lens. It takes power levels 10 times the now permitted exposure levels to produce cataracts in experimental animals.

Testicular reaction to heat injury resulting from microwave radiation appears to be the same as would result from a very hot bath. Although a condition of temporary sterility and damage to seminiferous tubules may occur, the condition does not appear to be of a permanent nature and will ultimately correct itself.

A good deal of discussion and controversy exists in current literature regarding the question of "nonthermal" or "specific" effects; i.e., effects caused by mechanisms other than thermal action. These effects include disturbances of the central nervous system, sensory perception, and various cardiovascular changes. A variety of activity and behavioral changes have been noted, including changes in alertness and endurance. There have also been reports of general loss of strength, memory disturbance, tiredness, headache, irritability, and loss of appetite. A conclusive answer to the "nonthermal" effects question is not currently available.

There are two additional, unexplained temporary responses of man to microwaves which have been reported. One of the responses is nausea. The effect is purported to occur within the frequency range from 9-12 gigahertz. Also, certain people can perceive an auditory response in the form of a "buzz" when exposed to frequencies between 0.2 and 3.0 gigahertz which are in a pulse-modulated format within the audio frequency range.

To guarantee the safety of persons who work with airborne radar, additional and extensive medical research is continuing in military and civilian research centers. In the meantime, high-power radar transmitters are to be treated with full respect and in accordance with the necessary precautions outlined in flight manuals and

supplements. Such documents provide limiting radiation hazard distances (minimum safe distances) and maximum allowable exposure times for personnel working around radars.

8

Hazard Prediction. The Bureau of Medicine and Surgery has established safe limits based on the power density of the radiated beam and the exposure time of the human body in the radiation field. These maximum personnel exposure levels are as follows:

In the frequency range between 100 megahertz and 100 gigahertz, personnel exposure shall not exceed the following:

- For continuous exposure, the average power density is not to exceed 10 milliwatts per square centimeter.
- For intermittent exposure, the incident energy level is not to exceed 300 milijoules per square centimeter per 30-second interval.

All areas in which the energy levels exceed the above limits shall be considered hazardous. Accordingly, admittance to areas where the exposure levels exceed the above limits shall be restricted, and warning signs shall be posted.

The Electromagnetic Survey Group of the Naval Ship Engineering Center is responsible for determining hazardous areas and ensuring that the possibility of biological injury to personnel from radio frequency radiation is minimized or nonexistent. Theoretical calculations and power density measurements are used to establish the distances from radar antennas within which it is not biologically safe for personnel to enter. Shipboard power density surveys may be routinely conducted by qualified personnel using the thermistor type power meters, usually the Hewlett-Packard 431 series or the AN/USM-177 power meters. Techniques for the general operation of these instruments may be obtained by referring to the Technical Manual for Radio Frequency Radiation Hazards (NAVSHIPS 0900-005-8000).

Awareness of the potential dangers of high-powered radar has led to refinement of hazard prediction techniques so that it is possible to predict, during the early design stages of an aircraft, the presence and degree of hazard to be anticipated and to incorporate safety provisions that do not detract from the aircraft's primary mission. For example, cam cutouts (trigger kills), system safety devices, and interlocks prevent accidental ground operation of radar with weight-on-wheels in modern aircraft such as the F-14A *Tomcat.* Also, explicitly written operating procedures ensure clearly defined responsibilities to flightcrews and maintenance personnel when ground testing is being performed. Such procedures and survey data are incorporated in flight manuals and supplements. Two examples of survey data pertaining to hazardous ground operations involving RADHAZ are shown in Fig. 1 (S-3) and Fig. 2 (E-2C). This information was taken from each aircraft's flight manual. ◄

WARNING

- OPERATING AT FULL POWER, RADAR IS HAZARDOUS TO FUELING EQUIPMENT WITHIN 235 FT RADIUS.
- AT FULL POWER, RADAR IS HAZARDOUS TO PERSONNEL WITHIN 200 FT. AT LOWEST POWER HAZARDOUS AREA IS REDUCED TO 40 FT.

RADAR TRANSMISSION DANGER AREAS

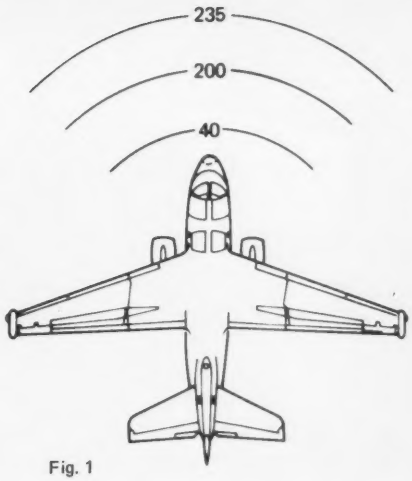

Fig. 1

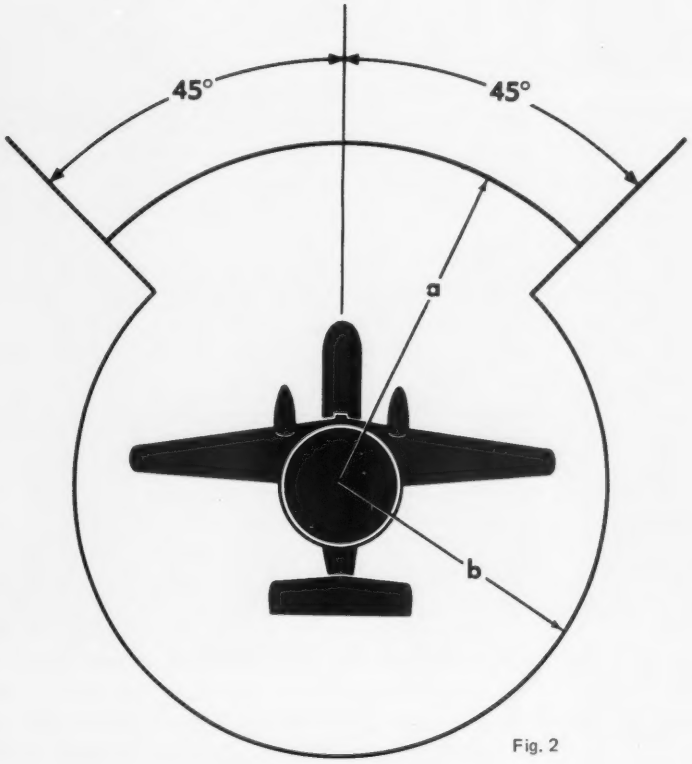

Fig. 2

MAIN BEAM AXIS
(ANTENNA IN FIXED POSITION)

WARNING

- RADIATION MAY CAUSE STEEL WOOL TO BE SET AFIRE OR METALLIC CHIPS TO PRODUCE SPARKS, WHICH IN TURN MAY IGNITE SPILLED OILS OR FUELS AROUND AIRCRAFT AND BUILDINGS.
- UNAUTHORIZED TRANSMISSION ABOARD SHIP IS PROHIBITED.

NOTE

THE TABULAR INFORMATION IS APPLICABLE TO FIXED ANTENNA POSITIONS. IF THE ANTENNA IS ROTATED, THE (a) SECTOR MUST MOVE ACCORDINGLY.

THE DISTANCES INDICATED FOR PERSONNEL SAFETY ARE BASED ON A LEVEL OF .01 WATTS/CM^2.

MINIMUM DISTANCE (FEET) TO BE MAINTAINED FROM OPERATING RADAR

DANGER AREAS	PERSONNEL	VEHICLES	FUELING	EXPLOSIVES
SECTOR a (MAIN LOBE)	170 FT	255 FT	1000 FT	1500 FT
SECTOR b (SIDE LOBE)	20 FT	30 FT	150 FT	300 FT

By LCDR Jim Loughmiller, VA-164

ZERO

A BASIC principle of leadership is the establishment of an attainable goal. To attain a goal where nothing happens (zero accidents) using those trained to make things happen (the military) is difficult. What we need to do is strive for a positive goal – efficient operations. The corollary will be the elimination of the "inefficient" accident.

It is generally accepted that it is beyond the capability of any single individual to completely plan and execute a highly complex and efficient operation. So, we need to break the overall task down to manageable bits. For example, any selected individual is capable of achieving excellence and efficiency in a limited area. One or perhaps two parachute riggers are able to maintain all of their equipment, conduct their periodic checks, and ascertain that all chutes are in perfect working order at all times. Here, you have two individuals responsible for a limited area. This, then, becomes an efficient and successful operation.

This concept must be spread throughout the entire maintenance effort to include engines, airframes, and all aircraft associated equipment. Once the concept is applied, each shop and division strives to achieve excellence in its particular area – a realistic goal. Toward that end, constant leadership techniques must be applied to detect and correct areas deficient in properly trained manpower and/or adequate hardware.

When the attitude of excellence permeates the entire squadron, the squadron will function as a well-oiled machine. It will be an operational organization in which you'll be able to place a great deal of confidence.

All of the above mentioned effort is channelled toward the ultimate goal of a safe and efficient operation in the air. To make any one particular flight efficient, attention also has to be directed toward the individual aircrewman. That is to say, it must be ensured that each individual not only knows how to operate

ACCIDENTS

A Byproduct of Efficiency

his aircraft, but how to operate it in the most efficient manner possible. His present capabilities must not be exceeded, and he must be constantly trained to increase his capabilities. The flight leader, for instance, displays his leadership by getting his flight from the point of departure to the target and return in the most efficient and economical manner possible. Once at the target, each individual must make his *utmost* effort to get his ordnance on target and simultaneously maintain flight safety during each run.

The whole program is relatively simple. Each individual must constantly strive to do the best he can and continually increase his capabilities. When the best efforts of all individuals in the ground operation are coordinated with the best efforts of the aircrews, the result is an overall safe and efficient operation.

Once a safe and efficient operation is achieved and the attitude of striving for excellence is instilled in all hands, the entire operation must be continually monitored and updated. Periodically, it becomes necessary to take stock of the organization's manpower qualifications because of changes in personnel due to transfers. Because of these inevitable personnel changes, it's easy to be lured, on a gradual basis, into the trap of accepting less than optimum performance. As soon as anything less than excellent performance becomes acceptable, a degradation of the entire operation begins. This degradation of a squadron has a way of snowballing until the stage is set for an accident. If a pilot doesn't know his procedures, if a mech takes a shortcut, or if the QAR gets rushed and overlooks the "missing cotter pin," the entire aircraft can literally go up in smoke.

If you strive to make your organization as efficient as possible, accidents will be few and far between. Of course, there's always that "fluke" accident involving material failure; but if you've defined your goal as efficiency and excellence and put in the long, hard hours required to achieve that goal, you won't ever see that "pilot error" or "maintenance caused" accident. You will be well on your way to ZERO ACCIDENTS. ◄

HELO HIGH-WIRE

LAST summer, towards the end of a Saturday afternoon, a young pilot who had finished his duties at a static recruiting display, set course for his base in his single-engined *Sioux* when he received a radio call for help. A free-fall parachutist had become entangled in high-tension wires about 110 feet AGL. The location was nearby, so the helo pilot diverted to examine the problem of rescue.

Reaching the scene, he made three orbits to take stock of the situation. After landing, the pilot conferred with police and fire brigade officials. His initial reaction was that he would be unable to help, but after hearing that the parachutist was weakening and that alternative rescue plans were not readily available, he decided to attempt the rescue.

The available fire brigade ladders were inadequate in that they were either too short or could not be extended on the relatively soft stubble field beneath the parachutist.

The local electricity board would probably have been able to carry out a successful rescue using a pulley and trolley running along the topmost wire, but this would have required considerable time to allow for charge dissipation following switchoff of power and for mustering the rescue party and equipment.

Other helicopter assistance had been requested, but owing to communication delays, a nearby helicopter field wasn't informed until almost 2 hours after the parachutist had become suspended. Faced with a nonworking day and no SAR standby commitment, attempts had so far failed to raise a scratch crew to attempt rescue.

So, with pressure on all sides mounting for him to take action, the pilot of the *Sioux* – which isn't equipped with a winch – agreed to attempt the rescue.

The rescue plan involved the use of a 200-foot, 1-inch diameter nylon rope with a harness at one end. The rope was to be secured to the aircraft's forward, starboard anchor point, and coiled on the cabin floor. With the starboard door removed, the rope and harness were to be lowered to the parachutist from a high hover above the wires. Once in the harness, he would be lifted clear of

ACT

the cables and then lowered to the ground.

After securing the rope, removing the door, and briefing his observer, the pilot took off and established a high hover into the wind at a right angle above the cables. The parachutist was suspended by his drogue parachute from the central earth wire; below him and on either side, were live cables. Although the power was switched off, the helo pilot had been briefed that there could still be a high voltage residual charge in the wires that could be lethal. (At the time the rescue was attempted, there was no residual charge.)

Once in the hover, the observer payed out the rope to the man below, directing the pilot as he did so. The pilot could not see what was happening beneath his helo and had to rely on information supplied by the observer. The parachutist, having grabbed and climbed into the harness, appeared ready for a lift between the wires. The observer informed the pilot accordingly.

A gentle climb was commenced, but the rescue rope became entangled with the discarded parachute that was still attached to the power cables. Within seconds, the helo began to roll to starboard, and the pilot reached a point where he had insufficient left cyclic control. A gentle descent reestablished adequate cyclic control, but the pilot remarked he had run out of control. It is at this point that things *really* started to go wrong.

The observer misunderstood the pilot's remark and thought that the aircraft was out of control. The pilot was directed by the observer to move forward and down, slowly. Here, again, there was some misunderstanding because the observer claimed that he said "backwards" and that his intention was to lower the man through the wires to the ground before (as he thought) the aircraft crashed. The pilot inquired whether the man was clear of the wires and the observer said "yes." At this stage, the pilot assumed that the parachutist was hanging free below the aircraft, having cleared the wires from above. He continued the forward and downward movement.

He then asked if the man was on the ground and was told "nearly." More misunderstanding had occurred. As the helo descended with the rescue rope across the top wire and the parachutist below the wire, the angle between the rope and tail rotor was decreasing.

Not surprisingly, a point was reached where the aircraft's descent was momentarily arrested. The pilot assumed that this was because the man was on the ground and causing the rope to drag. He pulled back on the cyclic and *BANG* – violent yaw as the tail struck the rope, then rapid descent, 360-degree spin, and impact with the ground!

The pilot told the observer to get out, closed the mixture control, switched off the master switch, and vacated as quickly as he could. A fire broke out in the engine, but was rapidly extinguished by the firemen in attendance.

Meanwhile, the hapless parachutist had fallen to the ground, narrowly missing a safety blanket. He was seriously injured.

A sad ending to what might have been a very different story if the lack of clear communication between the pilot and observer, albeit in a stress situation, had not given rise to such major misunderstandings.

It was a complicated and unusual task – the likes of which the crew had never previously experienced. A full and thorough brief and complete communication and understanding between all concerned was a fundamental requirement that would have improved the chance of success.

The lesson of the accident is only too obvious. Without adequate communication of ideas and information, a difficult operation will seldom reach a successful conclusion.

Courtesy RAF *Air Clues*

LIGHTNING

By LCDR M. P. Merrick, VP-11

HOW enjoyable it was as a boy to sit on the porch step and watch the "heat" lightning of a distant summer thunderstorm. It's natural, of course, that opinions change. As an airplane driver, I find that lightning no longer evokes a reaction anywhere close to joy. As a matter of fact, awe, or maybe even fear, might be more appropriate.

Since our squadron experienced three lightning strikes in a 10-day period, it became obvious that the ASO should try to figure out why. Maybe it's just bad luck – being in the wrong place at the wrong time. If so, little can be done to eliminate the hazard, assuming we continue to fly operational missions. We *can* ensure, however, that pilot technique is appropriate to minimize the hazard. Further, if an aircraft system is involved, then we must ensure that the aircraft are properly designed and maintained to minimize the hazard.

But, where is the wrong place? To determine the answer to this question, a little background is needed. Electrical flow occurs when a difference of potential exists of sufficient strength to overcome the natural resistance of the body through which the current will flow. In our problem, we are talking of two different bodies: air, a relatively poor conductor, and metal aircraft, a very good conductor. (The question of whether the flow is from negative to positive or vice versa is clearly not germane because the results will be the same in either case.) As an aircraft travels through the air, it develops an electrical potential. This charge is caused by friction resulting from dust or precipitation or passage through an electrical field, such as caused by a thunderstorm, and is proportional to the speed and surface area of the aircraft. The charge is dissipated through the area of least resistance – normally, the static wicks; but if they are insufficient, then via the small pointed areas of the aircraft, i.e., the wingtips, MAD boom, etc.

The development of a thunderstorm results in the formation of a strong electrical field. Although the electrical structure of a thunderstorm is not completely understood, it is generally agreed that the lower section contains a net negative charge centered near or a little above the freezing level, while the upper portion contains a net positive charge. Occasionally, a small, secondary positive-charge region is embedded in the base

of the cloud. Most lightning strikes occur between the negative and positive charge centers inside the cloud or between the negative center and the ground. Nevertheless, strokes can also occur between the positive center and the ground and between unlike charge centers in adjacent cells. If conditions were such that a stroke could pass in the immediate vicinity of an aircraft, the lower resistance of the plane might add to the possibility of its being hit.

Air Force and NASA studies have revealed that the majority of aircraft lightning strikes occur between 3000 and 9000 feet and, more importantly, at outside air temperatures between -5 and +5 degrees Celsius. Naval Safety Center records also tend to corroborate this information. Of 58 occurrences of lightning strikes where the altitude was reported, more than 36 percent occurred between 3000 and 9000 feet (strikes were reported from 1000 to 27,000 feet), and 69 percent of all strikes took place at 15,000 feet or below. A study conducted by GE for the airlines reported that 95 percent of all strikes occurred below 22,000 feet. Apparently, the preponderance of strikes near the freezing level must be related to the fact that the negative charge center is also found near this level. Two possible reasons exist for this relationship: (1) aircraft near the negative charge center are subjected to both cloud-to-ground and intracloud strokes while much higher or lower aircraft could generally intercept only one or the other or, perhaps more importantly, (2) the negative charge is not located at a single point, but is spread out with varying charge densities over a large volume.

Lightning strokes apparently do not follow a simple vertical path from negative region to ground or between negative and positive areas. Instead, the discharge follows a random, more or less horizontal path through the negative region before going vertical. Thus, an aircraft flying at or near the freezing level would be far more likely to intercept a stroke than would an airplane operating well above or below the O°C isotherm.

Several other wrong-place indicators are apparent from both the airline study and Safety Center records. Of the naval aircraft struck where the flight conditions were reported, 78 percent occurred in clouds (airlines reported 83 percent). Of 40 naval aircraft strikes, 60 percent occurred in rain, while 92 percent reported some type of precipitation (the airlines report showed 50 percent and 78 percent respectively). Seventy-two percent of the Navy pilots reported light or moderate turbulence when struck (70 percent for the airlines).

It is common to differentiate between lightning strokes and electrostatic discharges. Since air is a very poor conductor, a true lightning flash cannot occur until the electrical field has built up to several thousand volts/cm. The resulting current is also extremely high. Because an aircraft struck by lightning constitutes a segment of the total path, it carries the full current. On the other hand, in an electrostatic discharge, the aircraft itself serves as one of the charge centers.

Despite the several ways an aircraft can pick up a charge, it is unable to build up a very large charge before corona discharges occur either from the static wicks (by design) or from the various pointed areas of the aircraft. Thus, electrostatic discharge involves energy levels too low to result in structural damage to the aircraft. Nevertheless, some danger due to electrostatic discharge exists in that the corona *does* create an increased charge area which results in a large area to attract lightning strikes in the vicinity.

In conclusion, it is apparent that the greatest advantage in avoiding lightning strikes can be accrued by avoiding those altitudes at or near the freezing level. Also, by avoiding areas of precipitation, clouds, and turbulence, the pilot can minimize his chances of being struck. The advantage gained by adjusting airspeed to minimize electrostatic buildup is minimal by comparison. Although the advantage of maintaining functional static wicks to ensure reliability of avionics equipment is undeniable, they appear to be of relatively little value in avoiding lightning strikes.

Since more than 75 percent of all reported lightning strikes resulted in aircraft damage (to say nothing of adding gray hairs to the crewman concerned), it is certainly worthwhile to avoid that terror if at all possible.

Remember the boy sitting on the porch step watching nature's display? I'm sure he still enjoys that sight, but I'm equally certain that if he becomes a naval aviator, he will develop a great deal of awe and respect for the power of lightning.

Contributor's Corner

SILENT TALKING

By LCDR Paul E. Galanti and LCDR Allan R. Carpenter

(Publishing the following article neither constitutes Naval Safety Center endorsement nor downgrades the importance of HEFOE signals. – Ed.)

IN 1969, at a POW camp in Hanoi called the Zoo, a method of communication was developed which was a variation of the deaf-mute code. This POW "hand code" provides greater visibility and consequently greater range than its predecessor. It is extremely easy to learn, a fairly fast form of communication, and has unlimited application in an aviation, shipboard, or any high-noise environment.

Picture, for example, a fighter/attack aircraft, engine(s) running, shipboard, with EMCON imposed, 5 minutes prior to launch. The crew discovers an aircraft problem that would normally cancel the sortie, but could easily be fixed in time for the launch *if* a free exchange of information were possible between aircrew and ground personnel. You name it – LOX line disconnected, TACAN unreliable, radarscope loose and/or won't stow, etc. There are many situations involving aircrew/ground crew coordination that just can't be handled with the

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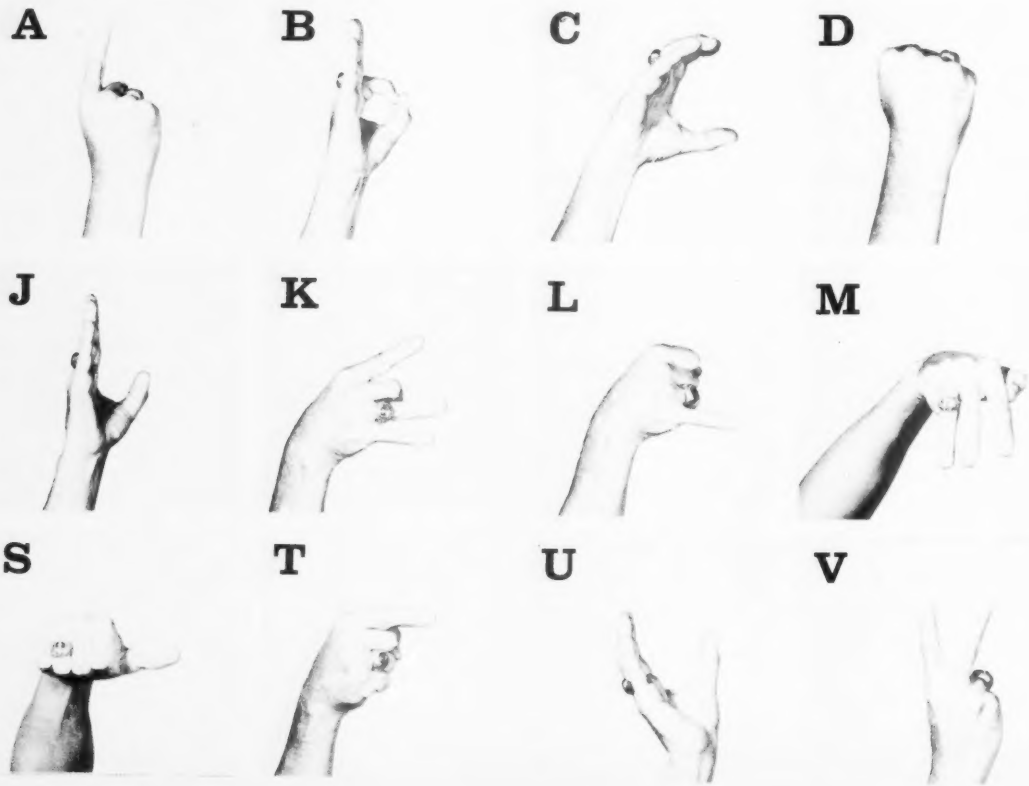
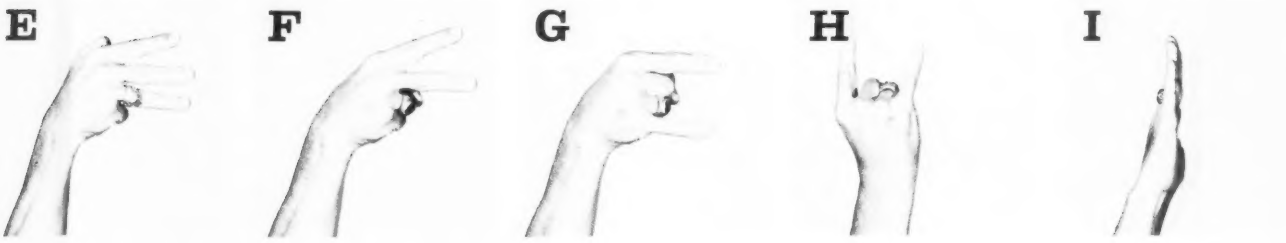


NUMBERS

Numbers must show circular motion to differentiate from letters.



existing HEFOE code, NATOPS hand signals, or "play-it-by-ear" sign language. The ability to form "letters" with hands can provide aircrew and ground crew a nearly unlimited communications potential. If you can spell it – accurately or phonetically – you can communicate it!

Another high-noise situation – Happy Hour! VYA (valiant young aviator) urgently hustling SYT (sweet young thing) – "Wingman" throws soggy napkin at VYA (thereby gaining his attention), whereupon "Wingie" communicates (via hand code) the following: "She's 16! – her husband big mean marine" – or simply, "Check 6!"

Once learned, the application of this simple skill is limited only by the ability to see the hand signals (affected by such factors as distance, poor lighting conditions, alcohol-fogged brain, etc.), and the imagination of the personnel involved.

The code has been taught and is being used at VF-43, NAS Oceana, with encouraging results. The line troubleshooters developed a workable proficiency level after *one 15-minute instructional session,* followed by a day of voluntary practice with each other during their spare time. Of course, it took the pilots a little longer.

The accompanying pictures show the position of the fingers for each letter of the alphabet, as seen by the "receiver." Numbers are the same as the standard Navy hand signals, except the hand is rotated in a vertical plane to distinguish numbers from letters. Zero is the letter "o," rotated. The hand is dropped slightly, limply, after each word or number series. Receipt of each word is indicated by the receiver nodding head (understand) or shaking head (do not understand or did not copy), as appropriate. The use of abbreviations (where they wouldn't lead to confusion) is encouraged, standardization to be worked out at the unit or wing level. Examples: T = the; U = you; R = are and Roger; and UR = your. Commas, question marks, and exclamation points may be drawn dramatically in the air, if necessary (see photos for period).

CONCLUSION: Training officers are encouraged to teach this code at a training session. It takes only a few minutes to learn the letters and about an hour to become fairly proficient. At subsequent training sessions, the TO or CO can close the meeting with an appropriate comment to be used as proficiency training.

Just one additional comment. Don't teach it to the local SYTs – and don't get caught using it at Vegas! ◄

Pilot "transmits" a problem to the troubleshooter with "silent talk."

YOUR OCCUPATION AND YOUR MENTAL ATTITUDE

By F. K. Ellis

FOR some of us, the word "occupation" means "profession"; for others, it means "obligated military service"; and for still others, it means "suitable employment until a better job comes along." No matter what the word means to *you*, your mental attitude toward your occupation will have profound results upon how effectively you perform assigned tasks.

What *is* meant by mental attitude? This refers to those impulses of the brain that say, "I sure hope it's too foggy to fly today," or "I'd like to be getting some actual instrument practice up in that weather!" or "Why bother to reprimand Jones for failing to display proper military courtesy? No one else seems to care," or "I'll take care of this disciplinary matter now"; and so on throughout the day.

This mental attitude becomes apparent in everything we think or act upon, but let's just consider it in relationship to our flying. We'll further categorize by looking at our mental attitude prior to, during, and after flight.

Prior to flight, we can look ahead and decide, "Well, I guess I'd better forego the movie tonight or that card game with Bob so I can get to bed at a decent hour and get up for breakfast. I feel more like flying after a good rest and with some food in my stomach."

On the other hand, prior to a flight, we can feel, "It's been *so* long since that last hop I flew that I honestly don't care whether I fly tomorrow or not. Anyway, the weather will probably be bad, so I'll put the proper charts in my nav packet later and play a few games of acey deucey now."

The above attitudes could mean the difference between being in the readyroom, in flight gear, on time, and prepared to fly in all respects instead of being late for a brief, searching madly for the chart of the operating area, missing the rendezvous procedures portion of the brief, possessing in general an "I couldn't care less – it's just one more boring training hop" attitude, and possibly not returning from that "boring training hop."

In flight, these same impulses can say, "Here we go again, another plane with unreliable ——. I guess I'll notify the tower that I'm aborting the hop." Or the impulse could say, "Oh brother, I can't expect much from this ——. I'm really going to have to try some of those procedures that the Ops officer put out in that AOM. Let's see, what *did* he say?"

Mental attitude in the landing pattern can be observed by many. As a wingman, are your thoughts, "What a lousy lead! You'd think with all those hours he'd be able to fly the airplane better," or are they, "Wow! This is really good practice for me. I didn't realize I couldn't hack formation any better than this."

What about the "meatball" on your mirror approach? Does the little voice say, "Orange Ball, you're going to stay centered all the way down," or does it say, "Well, here goes nothing. I sure hope I don't blow a tire and get fined 50 cents."

Finally, after flight, this same old mental attitude prevails. As the LSO debriefs you some night, do you think, "You're so wrong, pal. I *know* I wasn't slow. After all, *I* was flying the airplane." With this attitude, another debriefing may never be necessary. Let's hope your mental message says, "You, Mr. LSO, are so right. My next pass *will* be better."

So, your mental attitude contributes to your performance. So what? So, *you* are the controller of your mental attitude, and therefore, *your* performance.

STRUGGLE FOR SURVIVAL

(Part I of this first person account of the first successful bailout from the pilot's compartment of an H-3 appeared in the July APPROACH. Here, the author continues his story and shares his survival and rescue experiences. – Ed.)

By LT M. W. DeLorey, USN

Continued:

ONCE clear of the helo, I couldn't see how far I was falling because my helmet visor was blurred with fuel. I waited about 3 seconds, then yanked the D-ring. The anticipated shock from the chute's opening came as expected. But less than a second later, there was another shock. At first, I didn't realize what had happened until I felt cool . . . then cold . . . and finally, wet. I was underwater.

Almost 3 years had gone by since my water survival

training at Pensacola, but as soon as I realized I was underwater, it seemed as if I was "flashing back" and performing in the training pool. There was no anxiety or panic. Conditioned responses to a water emergency learned in the Training Command made my actions almost involuntary.

My first desire was to get out of the chute. I undid the chest release and the left leg release without any problem. But my right leg release would not unlatch although I tried several times. Finally, I gave up because I seemed to be sinking deeper. I pulled the CO_2 releases on my lifevest and surfaced. *(The survivor says he was wearing gloves at the time of bailout, but they were gone when he was in the water. – Ed.)*

On the surface, I surveyed my situation. My left arm and leg seemed to be hopelessly tangled in shroudlines. The chute canopy was almost completely submerged at my feet. Foremost in my mind was the thought "I must get free of it." I had heard so many sea stories about crewmen going down with their chutes. Again, I tried to undo the right leg quick release. This time I managed to release it, but it took both hands.

Becomes Conscious of Pains. Now I was becoming aware of pains. There was a burning throb in my right hip and pelvis and also a severe pain in my left knee. I tried moving my legs and arms and found that except for the pain, I could move them almost normally. Erroneously, I concluded that I did not have any broken bones. In reality, both my pelvis and leg were fractured.

I was kicking and cutting – trying to free my legs of the shroudlines – and getting apprehensive as to whether or not I would be able to free myself in time. By now, the canopy was completely submerged and sinking. I then decided that if I could just take my left boot off, I should be able to slide my leg out of the mess of shroudlines and be free. I tried to undo the boot, but I had modified my boots with those zippers that can be laced in place of shoelaces. The zipper would not operate because I could not get it flat enough to pull. I really wished for the original boots without zippers because even if the laces had become knotted, I could have used the shroudcutter to cut them.

Aircraft Arrive. Fixed-wing aircraft were soon on the scene – circling and searching the area – so I deployed dye marker and my radio. I had never used the survival radio in the water before. I assumed that it would float with the antenna upright out of the water, but it sank. I held it out of the water for a few seconds, but I needed both hands to get free of all the shroudlines. I let the radio go, hoping I would not cut its retaining line while cutting shroudlines.

I had cut all the shroudlines I could see, but something was still pulling me down. I reached down. To my shock and amazement, I brought an armful of uncut shroudlines to the surface. Where did *they* come from? Well, it didn't take long to realize that after I had undone my parachute quick releases, I had completely forgotten to slide out of the parachute harness. *I was still in my parachute.* I slipped out of it and, with a few more slashes with the shroudcutter, completely freed myself from the chute and backstroked clear.

Retrieves Survival Radio. Next, I retrieved my radio and was very grateful that I had not cut its retaining line. I was fairly sure the aircraft overhead had spotted me, but I wanted to make sure with the radio. Not until I tried to transmit on the voice portion of the radio did I realize how weak I had become from exertion, pain, and swallowing large amounts of saltwater. I could barely say "Help me!" So, I put the radio on beacon and waited.

Five to 10 minutes later, a SAR H-3 approached from behind. It made a high pass over me. I gave a double hands-up sign which the helo pilot interpreted as an OK. In retrospect, I don't know exactly what I was trying to tell him except that I was, in fact, alive.

The SAR helo then came into a 20- to 30-foot hover over me and lowered the rescue hoist. The rotor wash from this lower-than-normal hover became so severe that I could not breathe without swallowing saltwater and spray. Cupping my hands over the bottom of my sun visor and trying to suck air in between my teeth didn't help. All I could do was hold my breath or choke on saltwater.

Horsecollar Comes Undone. The horsecollar had been maneuvered next to me. I was able to grab it. I was sidestroking into the horsecollar, planning to turn over and grab it in the proper fashion; but when I was only halfway in, in a stomach-down position, there was suddenly tension on the cable. I was pulled about waist

high out of the water when, for some unknown reason, one end of the horsecollar released and dropped me back into the water.

Now, I was worse off than before. When the horsecollar released, it shifted my neck flotation bladder around to the right side of my head. I had to struggle to keep my mouth above water.

The helo crew had to rerig the rescue hook. During that time, however, the helo still stayed in that lower-than-normal hover over me and continued to aggravate my breathing problem. With one arm, I was still holding the bottom of my sun visor to try to make a protected area to breathe in. With my other arm, I was struggling to keep my head above water.

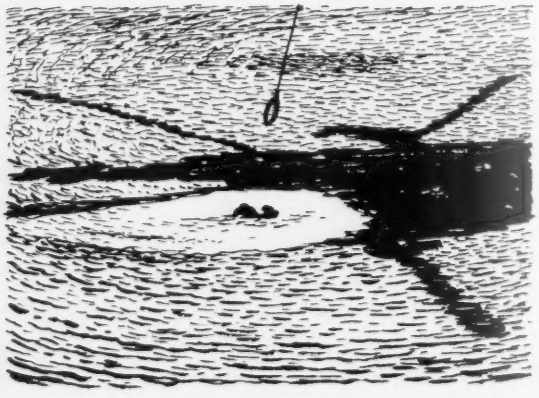
Severe Rotor Wash. I struggled and gasped so much that I tore the sun visor completely off my helmet. Now, my whole unprotected face was being hit by the severe rotor wash. All I could do was hold my breath and at the same time keep the broken portion of the sun visor in front of my face as best I could.

Finally, the helo did move off slightly, and I could breathe a little easier. I was able to throw my sun visor away and lower my clear visor. Now, I was very, very weak, and I knew that I was on the verge of drowning.

Unexpectedly, I heard a voice behind me. It was the rescue swimmer asking if I was all right. I could barely gurgle back, "My head, my head! Support my head! I can't breathe!"

Hoisted to Helo. The helo moved in again. The swimmer quickly secured me in the horsecollar, and I was lifted from the water. For the first time, I wondered if my injuries might be more serious than I had thought. Without the support of the water on my body, what had been throbbing pains became very sharp and severe.

While being raised to the helo door, I didn't even consider looking up – not because that is the proper procedure, but because I was so weak and in so much pain that I felt incapacitated. They brought me up to the cargo door, turned me so I faced out, then pulled me in and lowered me into a sitting position. Then I *knew* something was wrong. The weight on my pelvis caused excruciating pain. I screamed involuntarily and rolled over on my side into a fetal position which helped reduce the pain.



Thanksgiving Turkey Wishbone. The helo crew wanted to move me out of the cargo door area because they had to pick up another survivor. Hands went around my shoulders, and at least one person grabbed each leg and lifted. Here I was with a fractured pelvis and a broken leg – although unknown at the time – and I was being handled like the wishbone from a Thanksgiving Day turkey. After I screamed again, they quickly put me down and finished moving me by dragging me by the shoulders.

What I remember most after this is the pain and the extreme cold. I was cold in the water, but not uncomfortable. But after being pulled from the water, I was the coldest I have ever been in my life. I shivered uncontrollably. My teeth were chattering so much I could barely communicate.

Lessons Learned. I learned many things from this accident – the most important is the necessity for being psychologically and physically prepared for any possibility that may occur while flying. Anything can happen to anyone, and the final responsibility for preparedness rests on the individual. When you find yourself in a water survival situation, you quickly learn what "being alive" means. Only *your* knowledge, *your* state of mind, and *your* equipment can help you remain alive.

Here are a few specific recommendations and thoughts for other pilots and crews:

- First, know your survival equipment, and don't modify any of it on your own. I know I'll never put zippers in my flight boots again.
- Second, refresher training is necessary, especially parachute training for helo drivers. This particular flight was only the second time I had worn a parachute in over a year. Helo pilots and crews just don't think about parachutes often enough.
- Third, for myself and other helo drivers, be aware of rotor wash. It can kill. I almost found out the hard way.
- Fourth, for helo crews, if you pick up a person, assume the worst. My injuries may not have been aggravated by the handling I received after being hoisted aboard the helo, but they easily could have been. Assume the worst, and do your best.
- Lastly, trust your training and equipment. When things go from bad to worse, these – and your will to survive – are all you can rely on. ◄

notes from your flight surgeon

Make Sure

THIS incident was this particular ship's second man overboard in 2 days. And the first was like unto it.

On what was only his third day on the flight deck, a sailor was pulling a fuel hose near the No. 2 elevator. He failed to check the area aft of a parked A-7 for possible jetblast and walked into it. He was blown over the side.

Several people saw him fall. "Man overboard" was promptly sounded over the 1MC. The sailor was wearing all required safety gear, but after entering the water feet first, he couldn't locate his Mk-1 lifevest inflation toggle. He treaded water until the plane guard helo picked him up.

The ship has an indoctrination program for new men on the flight deck. A video tape of the helicopter rescue is being shown over the ship's recreational TV system for the benefit of all hands.

Not only do you have to make sure the men in your squadron wear their safety and survival gear, you have to be sure they know how to use it.

Too Many "Strobes"

BRIGHT lights from flares and other sources intensified environmental difficulties in the rescue of an A-7 pilot, says an endorser to the AAR. The lights temporarily masked the survivor's strobe light.

In the past 2 years, 3 out of 5 of this same Air Wing's accidents occurring at night were complicated by initial confusion as to which light source was the survivor.

In the case of an aircraft mishap which occurs close aboard a Navy vessel at night, the endorser says, lights thrown from the deck aid in initially locating the crash and rescue site. After the rescue site has been identified, however, numerous similar light sources in the water (some of the strobes) can cause delay while the crew of the rescue vehicle investigates "false survivor" lights.

The endorser recommends that, rather than discourage people from aiding in marking crash or man overboard sites, the feasibility of aircrewmen wearing color-coded strobe-type lights should be investigated. Distinctive lighting for the survivor would differentiate him from other lights in the water. This would help rescue personnel identify and quickly pick up a dazed or injured crewman.

(The Naval Safety Center has already presented this problem to COMNAVSEC (Commander, Naval Ships Engineering Center) who is taking it up with NAVAIRSYSCOM. – Ed.)

Wet Run

DRY run is what you usually call a practice session. The practice that the pilot in this survival episode went through was really a wet run – parachute drag by boat, use of flotation gear and survival equipment, embark/debark raft, and helo pickup.

When the real thing happened shortly after his water survival training, everything worked as advertised. He says the training "definitely" contributed to his successful postejection survival and rescue.

"I inflated my LPA and prepared to jettison the chute as I hit the water," he recalls. "As my feet touched, I released the chute fittings with no problem, even with gloved hands."

A stiff crosswind and clean separation of the Kochs carried the chute away and eliminated parachute entanglement. Because of the short interval between low-level ejection and water entry, he was not able to deploy the seatpan until after entering the water. He then inflated his raft and climbed aboard. Using his survival radio, he transmitted word that he was OK. He also made good use of his flares and dye marker.

By this time, SAR was in progress. Overhead were an OV-10, three A-4s, and an AF transport. An Army *Huey* made the pickup. The survivor hooked the lowered snaphook to his torso D-ring and was hoisted aboard.

The "wet run" practice apparently didn't carry over completely. Because the survivor did not leave his raft to swim toward the hoist cable as recommended, the helo pilot had some difficulty positioning the aircraft over the liferaft for pickup.

"Although, during this particular rescue, this was of no importance," the investigating flight surgeon states, "in other critical situations, it could have cost valuable time.

"I would like to point out," he continues, "that water survival training definitely contributed to this survival-rescue effort. I would encourage other commands to ensure that their pilots *and crewmembers* are kept up-to-date in such training.

"Too many units continue to find excuses not to participate in water survival training. This is unsatisfactory and should not be tolerated. Water survival training *will* save lives." ◄

NOTHING FITTED

Copied from "AIR CLUES," a Royal Air Force Magazine, FEB '70 issue.

The following copy of a letter has been sent by Squadron Leader S. H. Tottman, RAF, who is with the UK *Phantom* Liaison Team in the United States.

"It is unusual," he writes, "in that on one page the writer manages to cover operations, production, engineering, flight safety, supply, and future operational requirements. I wish I knew, but I've been unable to find out whether or not Alfred A. Cunningham ever got his new machine."

Naval Aviation Camp
Annapolis, MD
July 25, 1913

No. 454-AC-H-13
CAPT W. I. Chambers, U.S. Navy
Navy Department
Washington, DC

My Dear CAPT Chambers:

LT Smith and ENS Chevalier made a flight in the flying boat, with one of the new OX motors, to Old Point Comfort, VA, on the 22nd. In starting back, they disabled the machine and wired for spare parts. No details of the accident have been received, but they asked for a complete lower wing and flippers. These were sent them by express. A message was received today saying that the weather was too bad to start back.

My machine, as I told you, and as Mr. Towers probably told you, is not, in my opinion, fit for use. I built it from parts of the Burgess F and Wright B, which are not exactly alike, and nothing fitted. I had to cut off and patch up parts and bore additional holes in beams to make them fit. The engine bed, made by Burgess, was not exactly square with the front beam, so the engine had to be mounted a little out of true (with reference to the engine bed).

I have made over 200 flights in this machine, and recently, in spite of unusual care of myself and men, something seems to vibrate loose or off during a majority of the flights made. One of the propeller shafts is the same one used with the Gyro motor in the old machine. It is the only left-hand shaft here. While the engine runs smoothly, it does not have enough power to fly safely in any but smooth weather. It is impossible to climb over a few hundred feet with a passenger.

The whole machine has just about served its usefulness, and I would like very much to have a new machine of the single propeller type. LT Arnold, of the Army, after seeing the machine run and examining it, said that none of the Army flyers would go up in it. Will you kindly let me know what the prospects are for my getting a new machine.

Respectfully,

Alfred A. Cunningham

Alfred A. Cunningham

TA-4J Disconnected Landings

THE *Skyhawk* had touched down on runway center, 1000-1200 feet from the approach end. Power was reduced to idle, flaps raised, and the stick simultaneously pushed forward and left to counter the crosswind. The aircraft began angling right, and the stick was pushed further left. Left brake was applied in an effort to stop the swerve. The A-4 left the runway after approximately 1600 feet of travel. The pilot elected to "ride it out," as the ground was smooth, in an attempt to pick up a taxiway or the intersecting runway.

Departing the runway at a 10-12 degree angle, the TA-4J travelled 170 feet before the port main landing gear hit a manhole frame and cover, which collapsed the gear. (This manhole provides access to electrical cables servicing the runway lights and is 21 feet from the edge of the runway.) The aircraft continued alongside the runway sliding on the port tank, the nose gear, and the starboard main. Differential friction between the port tank and the rolling gear caused the aircraft to swerve left back onto Runway 36. It stopped after 2580 feet of travel.

There was no fire, and the pilot exited the aircraft uninjured after securing the engine.

It had commenced as an authorized functional checkflight, with the rear seat unoccupied. The flight was the first on the aircraft following ACE (Aircraft Condition Evaluation) processing by NARF. Preflight and pretakeoff checks confirmed that all systems were operating normally, and takeoff was without incident. No discrepancies were noted during the checkflight except that a left rate of roll, exceeding the acceptable 3 degrees per second with the hydraulic flight control system disconnected, was encountered.

Prior to disconnecting, the pilot had radioed Homefield and advised them to expect his return with a disconnect in about 10 minutes and obtained a wind report of 330 degrees at 15 knots. Since the duty was Runway 36, there would be a 7.5-knot left crosswind component.

After disconnecting and performing the rate-of-roll check, the pilot called the tower and reported 10 miles out, disconnected (for a straight-in to Runway 36). A wheels-down check followed at 3 miles with the wind given by the tower as 330 degrees at 15 knots.

The aircraft mishap board could find no evidence of spoiler malfunction. The board then directed its attention to a comparison of NATOPS requirements and techniques for an intentional disconnected landing and those employed in this instance. The board stated:

"The TA-4J NATOPS (NAVAIR 01-40AVD-1) recognizes the difficulties associated with a disconnected crosswind landing in its section on landing, stating: 'During a crosswind landing with the power boost disconnected, increased control stick pressures and

reduced control sensitivity make the landing extremely hazardous.' It further recommends that, when the crosswind component exceeds 8 knots, the runway arresting gear be used. Later, when discussing intentional disconnects, NATOPS states: 'A crosswind component of 8 knots will be considered maximum for a safe disconnect landing. The disconnect check will not be performed if a stronger component exists.'

"In this instance, the pilot called for the winds prior to disconnect, as required. Winds were reported as 330 degrees at 15 knots, giving a left-to-right crosswind component of 7.5 knots. The pilot told the board that he was aware of the NATOPS limit on crosswind and interpreted this report as evidencing winds bordering on the limit, but still acceptable. Winds were again requested inside 3 miles on final, and again were reported by the tower as being 330 degrees/15 knots.

"The board concludes that the wind at touchdown could have been slightly over the 8-knot component limit for disconnected landings as the tower gave winds to another aircraft after the TA-4J had disconnected as being 331 degrees/20 knots. This would give a resultant 10-knot crosswind component. In addition, the wind as recorded at the time of the accident was 336 degrees/20 knots, which corresponds to a crosswind component of about 8.5 knots. The best that can be said for the wind with any certainty is that conditions were marginal for a safe, disconnected landing.

"A review of the technique used at touchdown as reported by the pilot was in compliance with NATOPS with the exception that the landing was made on centerline and not on the upwind side of the runway as recommended when strong crosswinds exist. In this instance, it appears doubtful that the additional 50 feet of runway width left of center would have enabled the pilot to remain on the asphalt. The track of the aircraft leads to speculation that an off-centerline landing might possibly have enabled the pilot to track the aircraft through the throat of taxiway 6/24, slowing enough to have precluded gear failure when crossing the grass.

"It is worthy to note that although the pilot followed the recommended procedures at touchdown, there can be some question as to the amount of left stick and rudder that was actually applied. The pilot is of short stature (5' 8") and is not possessed of long limbs and overpowering force. All of these factors would work against him in forcing the control stick rapidly and fully into the wind. In addition, the pilot states that when exerting maximum effort in forcing the stick forward as recommended, he can barely get full deflection of the rudder pedals. The board is of the opinion that the combination of these factors would hinder the rapid and forceful deflection of the controls as was necessary in this situation.

"If the decision had been made not to perform the power boost disconnect and landing in view of the marginal crosswind component, this accident would not have occurred. The board points out, however, that successful landings under similar conditions are frequently made and have been accomplished on numerous occasions by this pilot in the past. *Anticipation* of the need for control deflections so that a swerve is prevented, rather than *reaction* to the swerve, was required in this case, and it was lacking.

"This board, which consists of three experienced A-4 pilots well-versed concerning the requirements for making safe disconnected landings, considers the NATOPS procedures sound and recommends no change. NARF records reveal no instances of prior difficulties in the completion of over 400 disconnected landings. This supports the contention of the board that successful disconnected landings *can* be expected when NATOPS criteria are adhered to and recommended techniques are 'smartly' applied." ◄

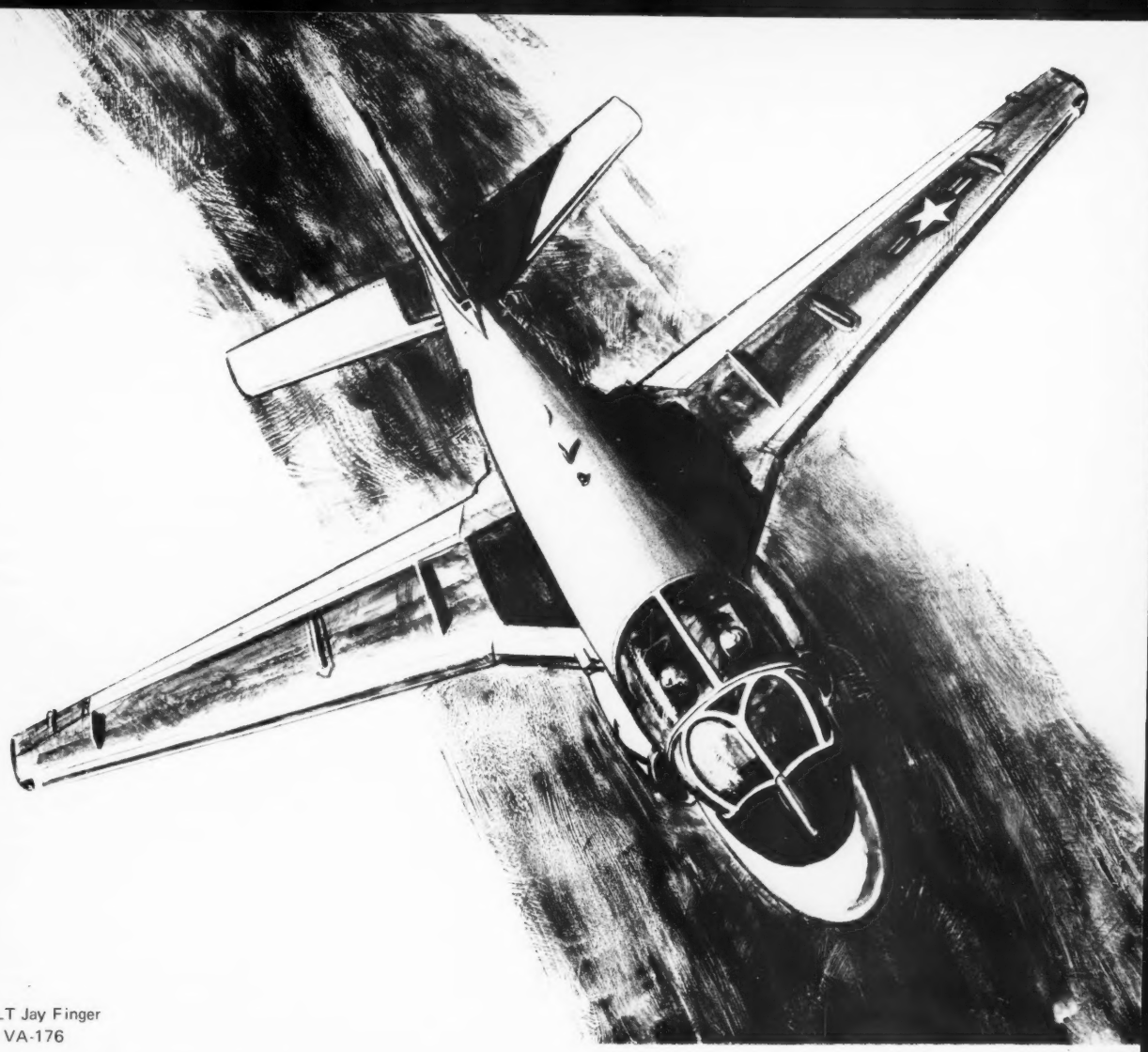
Good Show!

DURING the breakup phase of division rendezvous practice on a syllabus formation flight, ENS Craig F. Weideman, VT-21, the No. 3 student pilot (solo), noted the low level oil light illuminate. He aborted the breakup, leveled his wings, set power at 86 percent, and turned towards Homefield while informing lead of his problems and intentions. Almost immediately, the TA-4J's oil pressure began to fluctuate and dropped below 40 psi. Number 4 in the flight, a dual aircraft, joined the solo as a letdown was commenced from 17,000 feet, 17 miles south of the field. Oil pressure was at 30 psi and dropping.

An emergency was declared, and the student pilot set up for a precautionary approach. On final, oil pressure dropped to 20 psi. The student pilot made an uneventful straight-in landing, cleared the duty runway, and secured his aircraft with oil pressure reading 10 psi. Total time of flight from illumination of the oil light to shutdown was less than 10 minutes. The aircraft took over 3.5 gallons of oil when it was serviced. (Maintenance troubleshooters discovered an oil leak at the oil pressure transmitter mount boss.)

The student pilot's quick reaction and professional handling of a pending engine failure prevented a major aircraft accident.

Good show! ◄



By LT Jay Finger
VA-176

FEARSOME FLY-OFF

FOLLOWING a highly successful type-training period and operational readiness exercise, the pilots and NFOs eagerly manned their birds shortly after sunrise. The entire air wing was scheduled to fly off, and everyone was anxious to get home after several weeks at sea. "Down" aircraft were rare birds, indeed.

The pilot and B/N, about which our story revolves, reviewed the yellow sheet for their A-6, No. 507. There was one gripe of note: the canopy actuator had failed on occasion to hold sufficient locking pressure. A new actuator was on order, but there were none aboard ship at this time. They discussed the discrepancy with the maintenance control CPO who stated that there should be no problem since the canopy could be opened or closed and locked by the manual (secondary, but not emergency) canopy release system should the primary actuator fail to function normally. The pilot and B/N were satisfied and accepted the aircraft.

Preflight and start were normal, and the pilot noted to his satisfaction that the canopy *would* open and close by both normal and manual means. Ah, homeward bound!

Launch was routine, and the *Intruders* executed a normal division rendezvous overhead. The division in which this particular crew were members was the third group of A-6s to depart. Flying the No. 3 position was 507.

Upon receiving their IFR clearance, the leader

commenced a climb in VFR conditions to FL330. Passing 28,000 feet, the crew of 507 experienced a loss of cabin pressure. Within 20 to 30 seconds, the cabin pressure was ambient. Both pilot and B/N ensured that they were on 100 percent oxygen and cinched their oxygen masks as tight as possible. The pilot relayed this information to the flight leader, stating that all other conditions were normal and that neither crewmember was experiencing any physical difficulties. The flight leader rogered the info and continued the climb to FL330. He directed that No. 3 advise him of any other abnormalities.

Remembering the canopy actuator gripe, the pilot of the now depressurized 507 made several attempts to push the manual canopy handle (located in front of the lower right base of the stick) to the closed position, but to no avail. The "canopy switch" light on the annunciator light panel was not illuminated, however, so he assumed the canopy was indeed locked closed. (In A-6 aircraft, the canopy warning light will not illuminate unless the canopy handle is moved out of the locked-closed position. With AFC 185 incorporated, the handle will move to the neutral position if the canopy creeps open; this aircraft did not have AFC 185.)

The flight continued toward NAS Oceana (3 hours from the ship's launch position). About 10 minutes after level-off at FL330, the flight went IFR. A broad belt of thunderstorms and associated stratoform clouds had been forecast, and here it was! The four *Intruders* "tucked it in" and pressed on.

After another 20 minutes of flight, the pilot of 507 began experiencing a dull ache in his right hip. After only a short while, the pain spread to both his right and left knee. The pain at first was mild, but as time went by, it became more severe. Flying the No. 3 position in thunderstorm generated turbulence, IFR, with oxygen mask so tight that it hurt was tough enough. The pain racking the pilot's joints was making the situation close to unbearable.

Finally, after 1½ hours of flight (1½ to go), the following conversation took place between the lead aircraft and No. 3:

Three: "Lead, I've got something wrong with me over here. I think it's the bends."

Lead: "You all right?"

Three: "I'm suffering pretty severe pain in my joints. I think I'd better descend."

Lead: "We can't make it to Oceana if we go any lower. Descend, take No. 4 with you, and divert to Homestead as prebriefed. You'll need clearance for yourself and your wingman to descend through this weather."

Three (to his B/N): "We're just gonna have to declare an emergency and descend. I'm not going to be able to fly the plane much longer with this pain – not enough time to get a routine clearance to descend. We'll bingo to Homestead, refuel, and continue from there."

Lead: "Wait a minute, Three. Check your canopy – it's part way open."

At this point, the stricken pilot deisolated the aircraft hydraulic system, a procedure necessary to pressurize the canopy system hydraulically and allow its operation. (The pilot was to learn later that this procedure is also necessary for operation of the manual canopy system which he had earlier tried to activate without success.)

Upon deisolation, the canopy moved about 2 inches to the closed position. The canopy had crept open so slowly that the crew had never noticed its changed position! The cabin pressure began to creep upwards. The pilot then directed the B/N to turn on the canopy defog system which would increase cabin pressure to about 22,000 feet. As cabin altitude passed 28,000 feet, the pilot's pain subsided.

Periodically, the cabin pressure in 507 would lessen, but deisolation of the hydraulic system, coupled with defog operation, kept the pressure below 28,000 feet.

About 100 miles from destination, the weather improved to VFR. Fifty miles out, the flight leader requested a descent to set up for entry to the break. Upon approval, the flight commenced a fairly steep descent to 2500 feet. Now, the crew of 507 was in a dive from an effective altitude of 28,000 feet, and this time, the pilot suffered an ear block! The discomfort was severe, but home was in sight.

At last, the entire gaggle was on terra firma, and one crew in particular was extremely pleased to be there. The pilot's ear block subsided after touchdown, but his "postflight examination" revealed considerable bleeding from one ear.

The pilot of No. 4 in the flight had wondered aloud why No. 3 wasn't any smoother with his formation flying.

Two days later, the pilot of 507 consulted a flight surgeon about the matter. The source of the ear bleeding was never determined, but the flight surgeon stated that the pilot had been a victim of embolic dysbarism, or aviator's bends.

The air wing flight surgeon later briefed all squadron aircrews on the insidious nature of the bends and on the fact they can end one's flying career (and for that matter, one's life). The flight surgeon remarked that perhaps this pilot and his B/N were indeed fortunate to have survived the incident.

Think about this and see how many lessons *you* can learn. ◄

Bravo Zulu

LT Frederick C. Louderback, USNR

LT LOUDERBACK, OIC Replacement Training Unit 303, NARU Alameda, launched from Runway 25 at NAS Alameda in an A-7A *Corsair*. Immediately after takeoff, the A-7 commenced a hard right roll which he tried to correct using left stick, with little success.

The aircraft continued right, and ejection seemed imminent except for the fact that the *Corsair* was headed directly for downtown San Francisco. LT Louderback applied full left rudder and back stick. This leveled the wings and enabled him to maintain a slow climb.

At this point, the reserve pilot commenced dumping fuel, declared an emergency, and, with the help of Bay Departure, was able to avoid populated areas and bay area air traffic. At 4000 feet as he leveled the aircraft, the control stick froze. He attempted to control the aircraft using various modes of the automatic flight control system with no effect and thus was left with nothing more than rudder and elevator trim for control.

After all wing fuel had been dumped, LT Louderback requested vectors from approach control for a very gradual descent utilizing wide turns. This permitted him to fly a modified PAR approach to a successful field landing.

Inspection of the aircraft revealed that the ailerons and spoiler systems malfunction was due to failure of the roll feel isolation actuator. Closer inspection found that an improper extension unit had been installed which resulted in an unusual fatigue situation and subsequent system failure.

LT Louderback responded to a critical emergency situation in a cool, courageous, and highly professional manner and thereby saved a valuable aircraft. Well done!

Letters

Only some of us can learn from other people's mistakes. The rest of us have to be the other people.

Ace L.

Watch Your T_5

NATC Pax River – The Mystery of Tail Rotor Droop by CAPT Barbin, USAF, in the MAR '74 APPROACH touched upon a problem that some of us Marine heavy haulers have experienced in the past. While I was CO of HMH-463, for instance, there was a HAC who tried to take off after the Koreans fully loaded his CH-53 with cargo and then put nine passengers aboard without his knowledge. He got off in ground effect, but punched holes in the bottom of his helo after drooping the rotor and landing in rough terrain. My problem was, how does a pilot detect an overloaded helo during high gross weight conditions before he gets in extremis?

I think the pilot flying the aircraft should maintain his outside reference and not try to read engine performance gages. So, we looked to the copilot for help. My NATOPS officer, then MAJ Buzz Ekholm, devised the following T_5 observer technique, which I heartily endorsed:

Using max RPM, the pilot-in-command commenced the lift as the other pilot observed T_5, power turbine inlet temp. With a max of 643 degrees, when either T_5 reading passed 630 degrees, he called out 630 degrees to the pilot. If the pilot continued to pull collective, the other one called topping, then N_r droop at 100 percent and each 2 percent below that (98, 96, etc.).

Would you believe that we had no more rough terrain landings after that procedure was instituted? As a pilot, it was reassuring to me to hear the call "630" after I had transitioned to forward flight and could use the remaining excess power for a steeper climb from the zone.

This procedure was really quite adaptable to the H-53 because of the accuracy with which the T_5 gage could be read. It couldn't work too well in early models of the H-46. Try as we might, we couldn't get the procedure incorporated in the CH-53 NATOPS Flight Manual because of some shortsighted, I-don't-need-help-to-fly pilots. I'll always wonder how many so-called engine failures coming out of the zone were nothing more than drooped N_r because the pilot didn't know where he was on the power-available scale.

This T_5 observer procedure meets all the precaution criteria mentioned in CAPT Barbin's article, and I think it should be in more widespread use.

COL R. W. Peard, USMC

• Maybe now is the time. Let's hear some pros and cons from you operators.

Can Anyone Help?

FPO, San Francisco 96602 – I'm preparing a squadron lecture on orographic turbulence in relation to helicopter flying. I would appreciate any information you may be able to send and the names of any other agencies whom I could contact.

LT David C. Anderson, USMC
MAG-24, 1st MARBrigade, FMFPAC

• If anyone can help LT Anderson, contact him direct.

More Training

FPO, New York – The APR '74 APPROACH Air Breaks told of an SH-2D pilot striking a folded HF antenna because he was too low on final, and you stated that landing on a DE is a precise maneuver.

If landing on a DE is such a precise maneuver, why then is there no shipboard landing training provided for Fleet LAMPS pilots? Tailhookers are trained for carrier landings before they get their wings and undergo intensive operational training in the Fleet. The first time a LAMPS pilot sees a DE deck is when he deploys.

Since this is a precise maneuver, why aren't approach lanes clear of obstructions? Why is there an HF antenna folded across the aft end of the helo platform?

I don't think the pilot was too low on final. A more appropriate cause would have been *no prior training.*

Name Withheld

• Lack of training has been a sore point for quite a period of time – and right you are. But let's see just what is available.

Every helo pilot has practiced hundreds of precision landings to confined areas of some kind before he goes to sea. SOP requires *any* pilot (second tour gents included) to complete actual shipboard approaches and landings under the careful eye and instruction of an OinC current in every respect. The number of approaches and landings for qualification depends on the expertise of the individual being checked out. The number of decks available these days do not afford the luxury of bounce drills before deployment.

The best preparation before operating with any nonaviation ship is to arm yourself with all the info you can from *SPLASH, Helicopter Operating Facilities Bulletin No. 1 and 1B,* and *Resume.* Then, after becoming knowledgeable with this wealth of information, expect the deck you'll be

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approaching to be different, so you eyeball it in detail from a slow pass or two before beginning to operate. If it's safe – proceed. If it's not – don't.

Safety Standdown

FPO, PacLant – Our helicopters are remarkably versatile machines, capable of performing a wide variety of services. Most helo pilots are flight hogs – they'll fly every chance they get and seldom complain about being overworked.

For our squadron, safety standdowns are an impossible dream. We've had four standdowns *scheduled* this past year, and SOP has been a minimum of three unscheduled sorties per standdown day. Only one, a MedEvac, was really urgent.

The problem is simply that senior command and staff personnel think a sortie requires only two pilots and two crewmen. They think everyone else can stand down. No way!

Most squadrons fly crew concept, and invariably, a major portion of the training is missed because two or three complete crews are out flying. You can say goodbye to standardized training and teamwork. Any sortie wipes out all hopes for training maintenance personnel. For example, preflight inspections for the ready aircraft (and a standby) have to be conducted; servicing and directing personnel have to be on the scene; and troubleshooters have to stand by for the launch to fix last-minute gripes.

Unscheduled flights are the bane of maintenance control's existence. QA runs around trying to ensure there aren't any shortcuts, but worst of all is the attitude that these unscheduled sorties (flails) produce. It's difficult to instill the need for safety in all phases of operations when safety standdowns have to be scrubbed, over and over, for routine operations.

Sound planning and proper priorities will permit these important timeouts for safety, if only those who make things happen are really concerned about safety. We're ready to go anywhere, any time, on any mission; but come standdown time, let's do just that, STAND DOWN.

Name Withheld

BZ Deserved

Washington, DC – Re your BZ on pg. 7 of the MAY '74 APPROACH. As a fellow member of the "We made it to Hotel-2 and back" society, the article brought back some old memories and a few thoughts.

Unless changes have been made since 1967, when I last flew the "Hotel-2, Hotel-3, and back" roundrobin from Keflavik, the article should have also mentioned the following little goodies so capably overcome by the BZ crew:

- Unreliable and insufficient navaids for conditions.
- Wild, wooly, and generally unpredictable winds.
- Rapid fluctuations in altimeter settings.
- Atrocious runway and facilities at Hofn.
- Uniformly max gross or better loads.
- Antique aircraft for the mission.

The irony of it all is that unless CDR Wicke and LT Fletcher were two of the fortunate few allowed to log their time in Keflavik as other than proficiency while assigned to a staff job, they will join many others who spend years flying such missions and then have to sweat out BUPERS' determination of whether it will count towards their "gate" years.

When the time comes, I hope the BUPERS board has a member with lots of "proficiency" time in places like Iceland, Argentia, Alaska, etc.

CDR W. D. Monroe

Where's the Angel?

NATC Pax River – If one closely examines the cover of the JUN '74 APPROACH, one will find what appears to be a plane guard helicopter off the starboard side of USS ENTERPRISE. It is not a very significant rotary wing presentation.

Since the background picture was probably provided by a TRACOM PAO, it strengthens my point. The point is that from the commencement of training, student pilots are exposed to the concept that "if you can't make it with the real pilots, you'll end up in helicopters."

My experience shows this leads to a helicopter pilot syndrome in which second best is good enough. Let's fight this where it starts, at Pensacola.

LT D. F. Welch
Service Test

- **We'll start the fight, here and now.**

The original mural (measures 7 by 20 feet and hangs in CNATRA headquarters) was painted by artists Dwight Greenwalt, Ron Ferguson, and Bob Smith of Columbus Aircraft Division, Rockwell International. I'm sure they didn't *intentionally* slight the helo community.

As for helo pilots being second best, don't you believe it. Many topnotch students request helos, and in the Fleet, there are proportionately as many topnotch helo pilots as jet pilots.

Many helo missions are as demanding as *any* jet mission; for example, night dipping and night VERTREP to a bobbing destroyer. CDR Allen Kruger, in "One Year and Truckin'," MAY '74 APPROACH, dispels the second-best syndrome.

Any helo pilot who feels second best may be slightly paranoid, for nothing could be farther from the truth. ◄

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THE OTHER WAY TO STOP

F-8J makes successful barricade engagement after failure of nose landing gear to extend.

NAVY